

REMARKS/ARGUMENTS

In view of the foregoing amendments and the following remarks, the applicants respectfully submit that the pending claims are not rendered obvious under 35 U.S.C. § 102. Accordingly, it is believed that this application is in condition for allowance. **If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicants respectfully request that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.**

The applicants will now address each of the issues raised in the outstanding Office Action.

Rejections under 35 U.S.C. § 102

Claims 1-9 and 11 stand rejected under 35 U.S.C. § 102(a) as being anticipated by purportedly admitted prior art. The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

The Examiner continues to rely on Figures 6 and 7 of the present application as anticipating each of the claims. (See Paper No. 13, page 7.) However, the independent claims are allowable over the device illustrated in Figure 6 at least because Figure 6 does not disclose gate electrodes being provided in a predetermined number N of gate electrode groups, where N is the minimum number corresponding to the periodic unit about connections from the gate electrodes to connection

terminals within successive pixel groups. Further, the independent claims are allowable over the device illustrated in Figure 7 at least because that device does not disclose some of the gate electrode groups commonly connected so that the connection terminals are less than N , which is a number between 4 and one half the number of pixels in a column and which is also the minimum number of the periodic unit about connections from the gate electrodes to the connection terminals within successive pixel rows. These features, and the reasons why Figures 6 and 7 do not show them, are further described below.

The Examiner's rejections apparently rely on mischaracterizations of the devices discussed with respect to Figures 6 and 7 in the application. First, the Examiner is apparently treating electrodes of group "b" as "gate electrodes." Note, however, that electrodes of group b merely serve for charge transfer, they are not "gate electrodes". On the other hand, the electrodes of group "a" serve for both charge transfer and as common gate pulse application electrodes for turning on the shift gates 3. (See, e.g., page 3, lines 14-20) Thus, lines 4B are unrelated to "gate" electrodes. Second, the minimum number of the periodic unit about connections from the gate electrodes to the connection terminals within successive pixel rows is apparently 2 for Figure 6 and 16 for Figure 7.

In order for the Examiner to conform the device of Figure 7 with the claims, he apparently is using the numbering scheme illustrated in Appendix A, arguing that $N=17$. Lines numbered 1 and 18 are connected and both belong to the same residue class of modulo 17 (residue = 1 class). However, since the electrodes 15b and 16b are not gate electrodes, terminals 5 (indicated by triangles,

rather than the terminals 6 indicated by circles) are irrelevant to the claim language concerning the value N. As is illustrated in the modified version of Figure 7 provided as Appendix B, when only the terminals 6 are considered, N has to be 16, and no two horizontal lines in this group share a common terminal 6. Although some electrodes from group b share a common terminal 5, these electrodes aren't gate electrodes. Accordingly, independent claims 1-6 are not anticipated by Figure 7 for at least this reason. Since claims 7-9 depend from claims 4-6, respectively, these claims are similarly not anticipated by Figure 7.

Keeping the above definition of gate electrodes and non-gate electrodes in mind, the natural number N is defined to be -- the minimum corresponding to the periodic unit about connections from said gate electrodes to said connection terminals within said successive pixel rows. Regarding, N=32 used in the earlier rejection and N=17 used in the most recent rejection cannot be applied to the claims as amended. Specifically, in Figure 7, although 32 is a periodic unit, is not the minimum periodic unit -- the minimum periodic unit is 16. Note that N=17 is not a periodic unit concerning the connection from the gate electrodes (i.e., those electrodes of group "a") to the connection terminals (i.e., those denoted with element 6). (Recall, e.g., Appendix B.) Similarly, the Examiner contends that N=16 in Figure 6, but the minimum periodic unit in Figure 6 is apparently 2, not 16. Accordingly, independent claims 1-6 are not anticipated by either Figure 6 or Figure 7 for at least this additional reason. Since claims 7-9 depend from claims 4-6, respectively, these claims are similarly not anticipated by Figure 7.

New claims:

Dependent claims 12-17 further distinguish the present invention over the device depicted in Figure 7 by reciting that at least two horizontal lines belonging to the same pixel group, but to different gate electrode groups, are connected to a common connection terminal. For example, in the pixel group shown in Figure 3, the horizontal lines from the fifth and seventh lines (which are in different gate electrode groups) are commonly connected to terminal 5.

Dependent claims 18-23 further distinguish the present invention reciting that only two connection terminals connected to said vertical transfer unit are not connected to any of the gate electrodes. That is, only two (or no more than two) electrodes serve solely as the transfer electrodes. This advantageously reduces the number of terminals. This means that there are only two (or at most two) connection terminals that are not connected to the gate electrodes, but that are connected to the vertical transfer unit.

Conclusion

In view of the foregoing amendments and remarks, the applicants respectfully submit that the pending claims are in condition for allowance. Accordingly, the applicants request that the Examiner pass this application to issue.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited on **September 8, 2003** with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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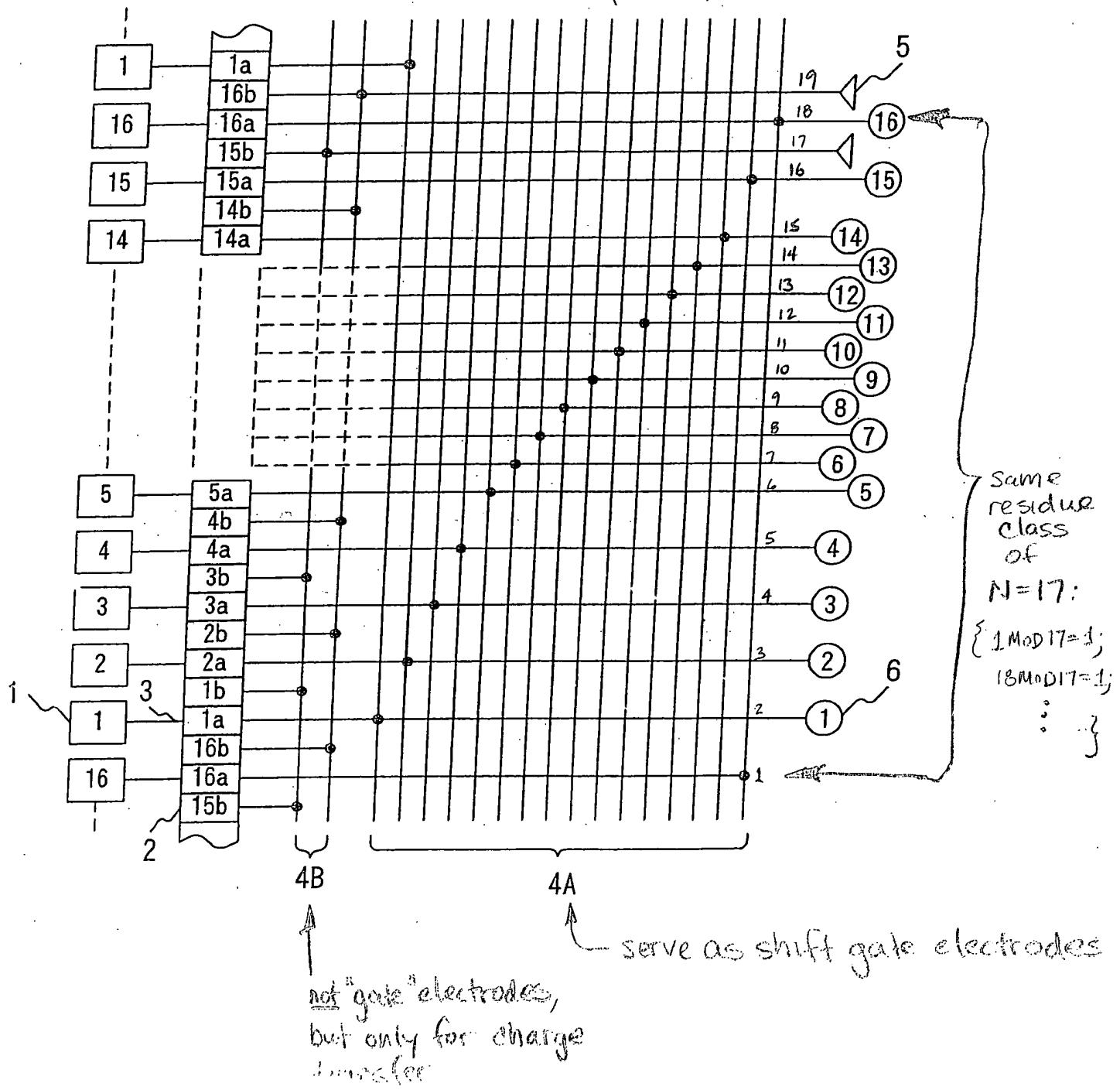


APPENDIX A

Examiner's Numbering Scheme

FIG. 7

(Prior Art)





APPENDIX B

Lines for non-gate
electrodes removed

FIG.7

(Prior Art)

